Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended) A method for forming a spin-valve type abutted junction GMR sensor element with a thinner hard magnetic longitudinal bias layer having significantly improved magnetic ~~propertries~~ properties in the junction region comprising:

providing a substrate;

forming over said substrate a first seed layer for the spin-valve GMR sensor element;

forming over said first seed layer a spin-valve GMR sensor element;

etching said spin-valve GMR sensor element and said first seed layer to produce surfaces for abutted junctions;

forming over said surfaces for abutted junctions a lattice matching second seed layer for the hard magnetic bias layer, said second seed layer covering all of said surfaces;

forming over said lattice matching seed layer a hard magnetic longitudinal bias layer, an undersurface of said bias layer contacting only the second seed layer;

forming over said hard magnetic longitudinal bias layer a conducting lead layer.

2.(currently amended) The method of claim 1 wherein the first seed layer for the spin-valve GMR sensor element is a layer of material chosen from the group consisting of NiCr and NiFeCr, and is formed to a thickness of between 15 Angstroms and 200 Angstroms.

3.(currently amended) The method of claim 1 wherein the first seed layer for the spin-valve GMR sensor element is a layer of Ta, and is formed to a thickness of between 15 Angstroms and 200 Angstroms.

4.(currently amended) The method of claim 2 wherein the lattice matching second seed layer for the hard magnetic longitudinal bias layer comprises a layer of CrX, X being chosen from the group consisting of Ti, W, Mo, V, and Mn, formed on a Ta underlayer, the Ta being formed to a thickness of between 10 Angstroms and 200 Angstroms, and the CrX being formed to a thickness of between 15 Angstroms and 200 Angstroms.

5.(currently amended) The method of claim 3 wherein the lattice matching second seed layer for the hard magnetic longitudinal bias layer is a layer of CrX, X being chosen from the group consisting of Ti, W, Mo, V, and Mn and the CrX being formed to a thickness of between15 Angstroms and 200 Angstroms

6.(original) The method of claim 1 wherein the hard magnetic longitudinal bias layer is a layer of CoY, wherein Y is chosen from the group consisting of CrPt, Pt, and CrTa alloy, and is formed to a thickness of between 50 Angstroms and 1000 Angstroms.

7.(original) The method of claim 1 wherein the conducting lead layer is a layer of Ta/Au/Ta and is formed to a thickness of between 100 Angstroms and 1650 Angstroms.

8.(currently amended) A spin-valve type abutted junction GMR sensor element with a thinner hard magnetic longitudinal bias layer having significantly improved magnetic ~~propertries~~ properties in the junction region comprising:

a substrate;

a first seed layer for the spin-valve GMR sensor element formed over said substrate;

a spin-valve GMR sensor element formed over said first seed layer;

surfaces for abutted junctions etched into said spin-valve GMR sensor element and said first seed layer;

a lattice matching second seed layer for a hard magnetic bias layer formed over said surfaces for abutted junctions, said second seed layer completely covering said surfaces;

a hard magnetic longitudinal bias layer formed over said lattice matching second seed layer, an undersurface of said bias layer contacting only said second seed layer;

a conducting lead layer formed over said hard magnetic bias layer.

9.(currently amended) The ~~method~~ sensor element of claim 8 wherein the first seed layer for the spin-valve GMR sensor element is a layer of material chosen from the group

consisting of NiCr and NiFeCr, and is formed to a thickness of between 15 Angstroms and 200 Angstroms.

10.(currently amended) The ~~method~~ sensor element of claim 8 wherein the first seed layer for the spin-valve GMR sensor element is a layer of Ta, and is formed to a thickness of between15 Angstroms and 200 Angstroms.

11.(currently amended) The ~~method~~ sensor element of claim 9 wherein the lattice matching second seed layer for the hard magnetic longitudinal bias layer comprises a layer of CrX, X being chosen from the group consisting of Ti, W, Mo, V, and Mn, formed on a Ta underlayer, the Ta being formed to a thickness of between 10 Angstroms and 200 Angstroms, and the CrX being formed to a thickness of between 15 Angstroms and 200 Angstroms.

12. (currently amended) The ~~method~~ sensor element of claim 10 wherein the lattice matching second seed layer for the hard magnetic longitudinal bias layer is a layer of CrX, X being chosen from the group consisting of Ti, W, Mo, V, and Mn and the CrX being formed to a thickness of between15 Angstroms and 200 Angstroms.

13.(currently amended) The ~~method~~ sensor element of claim 8 wherein the hard magnetic longitudinal bias layer is a layer of CoY, wherein Y is chosen from the group consisting of CrPt, Pt, and CrTa alloy, and is formed to a thickness of between 50 Angstroms and 1000 Angstroms.

14.(currently amended) The ~~method~~ sensor element of claim 8 wherein the conducting lead layer is a layer of Ta/Au/Ta and is formed to a thickness of between 100 Angstroms and 1650 Angstroms.